

Claims

1. Within a telecommunications network, a method of processing half-calls each having opposing first and second ends, each of said half-calls being one of an originating half-call terminated at the first end thereof by calling
5 consumer premises equipment and a terminating half-call terminated at the first end thereof by called consumer premises equipment, wherein an associated pair of half-calls connected at their second ends including both an originating and terminating half-call completes a call connecting the consumer premises equipment terminating the respective first ends of the half-calls that form the
10 pair, said method comprising:

(a) applying identifiers to originating half-calls such that the originating half-calls are distinctly identifiable thereby with respect to one another, said identifiers thereafter accompanying terminating half-calls that form associated pairs of half-calls together with the originating half-calls to
15 which the identifiers were applied; and,

(b) examining terminating half-calls to detect the identifiers such that upon detection of the identifiers the terminating half-calls accompanying the detected identifiers and the originating half-calls to which the identifier were applied are recognized as associated pairs of half-calls.

20 2. The method of claim 1, further comprising:

prior to step (a), receiving the originating half-calls from the calling consumer premises equipment over a packet-switched network;

translating the received originating half-calls from a packet-switched call format to a circuit-switched call format such that each originating half-call
25 defines an originating half-call routing path having a packet-switched portion and a circuit-switched portion;

after step (a), directing the received originating half-calls to a circuit-switched network for routing;

prior to step (b), receiving the terminating half-calls from the circuit-switched network;
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translating the received terminating half-calls from the circuit-switch call format to the packet-switched call format such that each terminating half-call defines a terminating half-call routing path having a packet-switched portion and a circuit-switched portion; and,

- 5 after step (b), directing the received terminating half-calls to the called consumer premises equipment over the packet-switched network.

3. The method of claim 2, wherein upon recognizing associated pairs of half-calls, the respective second ends of the half-calls forming each pair are connected to one another so as to reduce the originating and
10 terminating half-call routing paths defined thereby to only their packet-switched portions.

4. The method of claim 2, wherein upon recognizing associated pairs of half-calls, the respective second ends of the half-calls forming each pair are connected to one another so as to eliminate the circuit-switched
15 portions from the originating and terminating half-call routing paths defined thereby.

5. The method of claim 1, wherein the identifiers are audio watermarks, said audio watermarks comprising distinctly encoded signals applied to the originating half-calls.

20 6. The method of claim 5, wherein step (a) comprises:
 superimposing the audio watermarks on traffic being delivered via the originating half-calls.

7. The method of claim 6, wherein the audio watermarks are substantially unperceivable by end users employing the consumer premises
25 equipment.

8. Within a telecommunications network, a call processing apparatus for processing half-calls each having opposing first and second ends, each of said half-calls being one of an originating half-call terminated at

the first end thereof by calling consumer premises equipment and a terminating half-call terminated at the first end thereof by called consumer premises equipment, wherein an associated pair of half-calls connected at their second ends including both an originating and terminating half-call completes a call
5 connecting the consumer premises equipment terminating the respective first ends of the half-calls that form the pair, said call processing apparatus comprising:

application means for applying identifiers to originating half-calls such that the originating half-calls are distinctly identifiable thereby with respect to
10 one another, said identifiers thereafter accompanying terminating half-calls that form associated pairs of half-calls together with the originating half-calls to which the identifiers were applied; and,

examination means for examining terminating half-calls to detect the identifiers such that upon detection of the identifiers the terminating half-calls
15 accompanying the detected identifiers and the originating half-calls to which the identifier were applied are recognized as associated pairs of half-calls.

9. The call processing apparatus of claim 8, further comprising:
translation means for:

(i) receiving the originating half-calls from the calling
20 consumer premises equipment over a packet-switched network;

(ii) translating the received originating half-calls from a packet-switched call format to a circuit-switched call format such that each originating half-call defines an originating half-call routing path having a packet-switched portion and a circuit-switched portion;

(iii) directing the translated originating half-calls to a circuit-switched network for routing;

(iv) receiving the terminating half-calls from the circuit-switched network;

(v) translating the received terminating half-calls from the
30 circuit-switch call format to the packet-switched call format such that each terminating half-call defines a terminating half-call routing path having a packet-switched portion and a circuit-switched portion; and,

(vi) directing the translated terminating half-calls to the called consumer premises equipment over the packet-switched network.

5 **10.** The call processing apparatus of claim 9, wherein the translation means comprises a gateway bridging the packet-switched network with the circuit-switched network.

10 **11.** The call processing apparatus of claim 9, further comprising:
connection means for connecting half-calls recognized as associated pairs such that the respective second ends of the half-calls forming each pair are connected to one another so as to reduce the originating and terminating half-call routing paths defined thereby to only their packet-switched portions.

15 **12.** The call processing apparatus of claim 9, further comprising:
connection means for connecting half-calls recognized as associated pairs such that the respective second ends of the half-calls forming each pair are connected to one another so as to eliminate the circuit-switched portions from the originating and terminating half-call routing paths defined thereby.

13. The call processing apparatus of claim 8, wherein the identifiers are audio watermarks, said audio watermarks comprising distinctly encoded signals applied to the originating half-calls by the application means.

20 **14.** The call processing apparatus of claim 12, wherein the application means superimposes the audio watermarks on traffic being delivered via the originating half-calls.

15. The call processing apparatus of claim 13, wherein the audio watermarks are substantially unperceivable by end users employing the consumer premises equipment.

25 **16.** In a telecommunications network including a packet-switched network and a circuit-switched network, a gateway that bridges the packet-switched and circuit-switched networks with one another by selectively

converting packet-switched calls into circuit-switched calls and vice versa depending on a direction of traffic flow over the gateway, said gateway comprising:

5 an audio watermark generator that applies identifiers to a first leg of calls routed through the gateway, said identifiers distinctly identifying the respective calls to which they are applied from one another; and,

 an audio watermark sensor that examines a second leg of calls routed through the gateway to detect for identifiers.

10 **17.** The gateway of claim **16**, wherein the gateway connects to the circuit switched-network through a circuit-switched telecommunications switch.

18. The gateway of claim **17**, wherein an interface is arranged between the gateway and the switch thereby operatively connecting them to one another such that from the perspective of the switch the gateway appears to behave as a remote digital terminal.

15 **19.** The gateway of claim **18**, wherein the switch is a class five switch.

20. The gateway of claim **19**, wherein the interface is a GR-303 interface.

21. The gateway of claim **19**, wherein the interface is a V.5.2 interface.